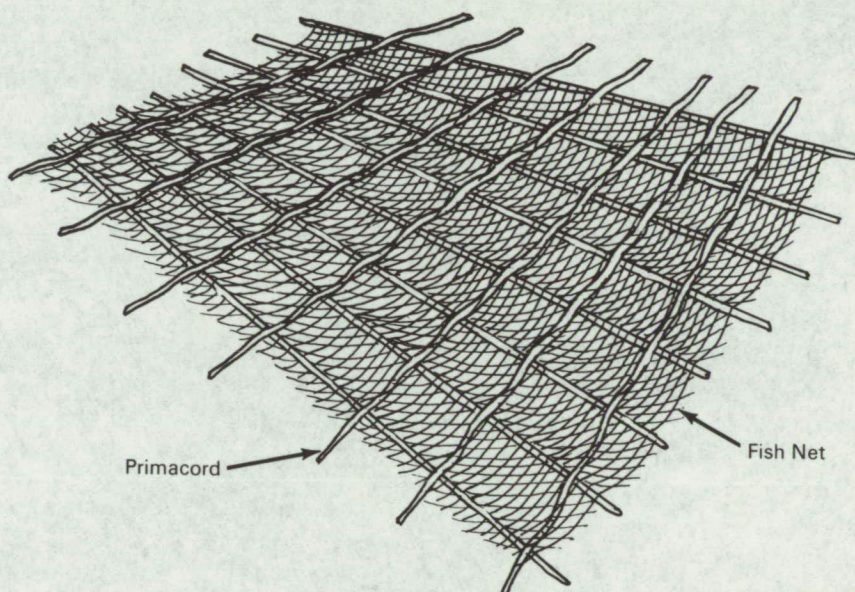


NASA TECH BRIEF



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Explosive Force of Primacord Grid Forms Large Sheet Metal Parts



The problem: To devise a method of using Primacord (a cord-type high explosive) for explosive forming of large sheet metal parts, such as base and apex gores for propellant tanks. The explosive force generated by the Primacord detonation must be uniformly distributed over the entire surface of the sheet metal workpiece.

The solution: Weave the Primacord through fish netting following a grid pattern drawn on a base below the netting.

How it's done: After the Primacord is woven through the netting, the resultant mat is positioned at a specified standoff distance above the sheet metal workpiece, which has previously been placed over the die cavity. Electric blasting caps are then taped to the

explosive charge, the assembly is lowered into a water-filled tank, and the charge is detonated. The uniformly distributed shock wave transmitted by the detonation forces the workpiece into conformity with the die cavity.

Notes:

1. The standoff distance of the charge above the workpiece must be at least twice the grid-square size to ensure a uniform pressure on the surface of the workpiece.
2. For certain contours, it may be desirable to increase or decrease the explosive force over localized areas of the workpiece. This localization can be achieved by proper adjustment of the Primacord grid pattern over the areas to be affected.

(continued overleaf)

3. Prefabricated Primacord-fishnet mats may be rolled up and stored for later use. All Primacord ends in the mats to be stored must be taped to prevent water entry.
4. Additional information concerning explosive forming of sheet metal parts is given in NASA SP-5017, "Metal-Forming Techniques," May 1965, available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia, 22151.

5. Inquiries may also be directed to:
Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B66-10014

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

Source: North American Aviation, Inc.
under contract to
Marshall Space Flight Center
(M-FS-316)